AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for predicting peak width of a solute peak in a gradient elution chromatography program, wherein the method comprises:

i) performing a time segmented numerical analysis,

wherein, within a given time segment, a strong component is presumed present in an amount that is constant;

ii) calculating a contribution to the broadening of ~~the~~ a solute peak in ~~the~~ said given time segment;

iii) correcting an accumulated peak width for peak compression occurring when the amount of said strong component relative to a weak component changes during the chromatography program;

iv) incrementing the amount of ~~the~~ said strong component to ~~its~~ said strong components next value in a successive time segment;

v) repeating steps i-iv until the solute peak elutes; and

vi) optionally displaying ~~the~~ said accumulated peak width of ~~the~~ said solute peak.

2. (Original) The method of claim 1, further comprising:

vii) repeating steps i-vi) for at least one successive solute peak.

3. (Previously Presented) The method of claim 1, wherein accumulated peak width at the given time segment is calculated according to an equation selected from the group consisting of:

$$\sigma_{\substack{current\\total}} = \left(\left(\sigma_{\substack{previous\\total}} * \left(1 - \frac{\frac{1}{1+k_{\substack{current\\segment}}} - \frac{1}{1+k_{\substack{previous\\segment}}}}{1 - \frac{1}{1+k_{\substack{previous\\segment}}}} \right) \right)^2 + \sigma^2_{\substack{current\\segment}} \right)^{1/2},$$

wherein k represents retention factor, and σ represents peak standard deviation expressed as distance; algebraic equivalents thereof; an equation which can be transformed, using known identities from chromatographic theory, into an algebraic equivalent thereof; and derivations thereof wherein peak standard deviation is expressed as time or as volume.

4. (Previously Presented) The method of claim 1, wherein in step ii is carried out by collecting data from two or more gradient elution separations and the gradient elution separations are ~~is~~ selected from the group consisting of linear gradients elution separations, non-linear gradients elution separations of any shape, step-wise changes in mobile phase compositions, combinations thereof, and combinations of isocratic conditions with one or more of said gradients.

5. (Previously Presented) The method of claim 1, wherein the gradient elution chromatography program is selected from the group consisting of a high performance liquid chromatography program, a unified chromatography program, a high temperature high performance liquid chromatography program, a subcritical fluid chromatography program, a supercritical fluid chromatography program, and a hyperbaric chromatography program.

6. (Previously Presented) The method of claim 1, wherein step iii) further comprises calculating the distance the solute peak travels during the given time segment and adding the distance to the total distance the solute peak traveled.

7. (Previously Presented) The method of claim 6, further comprising the steps of:

vii) interpolating in the last time segment to estimate retention time of the solute peak.

8. (Original) The method of claim 7, further comprising:

viii) repeating steps i-vii) for at least one successive solute peak.

9. (Previously Presented) The method of claims 1, wherein accumulated peak width at the given time segment is calculated according to an equation selected from the group consisting of:

$$\sigma_{\substack{current\\total}} = \left(\left(\sigma_{\substack{previous\\total}} * \left(1 - \frac{\frac{1}{1+k_{\substack{current\\segment}}} - \frac{1}{1+k_{\substack{previous\\segment}}}}{1 - \frac{1}{1+k_{\substack{previous\\segment}}}} \right) \right)^2 + \sigma^2_{\substack{current\\segment}} \right)^{1/2},$$

wherein k represents retention factor, and σ represents peak standard deviation expressed as distance: algebraic equivalents thereof; an equation which can be transformed, using known identities from chromatographic theory, into an algebraic equivalent thereof; and derivations thereof wherein peak standard deviation is expressed as time or as volume.

Claims 10-34 cancelled.